

## WHAT IS CLAIMED IS:

1. A self-cleaning method for a semiconductor exposure apparatus comprising a light source for emitting ultraviolet light for exposure, an optical system for  
5 guiding ultraviolet light emitted from the light source to an exposure mask on which an exposure pattern is formed, and a projection lens for projecting the exposure pattern to a subject to be processed, the method comprising the steps of:

10 arranging, at a position where the exposure mask is to be disposed, a transmittable plate for diffusing ultraviolet light guided by the optical system and irradiating the projection lens with it; and

15 irradiating an entire surface of the projection lens with the ultraviolet light emitted from the light source and diffused by the transmittable plate to optically clean a surface of the projection lens.

2. The self-cleaning method according to claim 1,  
20 wherein the transmittable plate is made of a quartz glass plate having a lens-shaped concave portion on a surface thereof or a quartz glass plate having bracelet-shaped concave lenses concentrically arranged on the surface.

25 3. The self-cleaning method according to claim 1, wherein the transmittable plate is made of a quartz glass plate having a lens-shaped concave portion on one surface

- 22 -

thereof and bracelet-shaped concave lenses concentrically arranged on the other surface thereof.

4. A self-cleaning method for a semiconductor exposure apparatus comprising a light source for emitting  
5 ultraviolet light for exposure, an optical system for guiding ultraviolet light emitted from the light source to an exposure mask on which an exposure pattern is formed, and a projection lens for projecting the exposure pattern  
10 to a subject to be processed, the method comprising the steps of:

arranging, at a position where the exposure mask is to be disposed, a transmittable plate for converging ultraviolet light guided by the optical system and  
15 irradiating the projection lens with it; and

irradiating a middle of the projection lens with the ultraviolet light emitted from the light source and converged by the transmittable plate to optically clean an inside of the projection lens.

20

5. The self-cleaning method according to claim 4, wherein the transmittable plate is made of a quartz glass plate having a lens-shaped convex portion on a surface thereof or a quartz glass plate having bracelet-shaped  
25 convex lenses concentrically arranged on the surface.

6. The self-cleaning method according to claim 4,

wherein the transmittable plate is made of a quartz glass plate having a lens-shaped convex portion on one surface thereof and bracelet-shaped convex lenses concentrically arranged on the other surface thereof.

5

7. A self-cleaning transmittable plate in a semiconductor exposure apparatus comprising a light source for emitting ultraviolet light for exposure, an optical system for guiding ultraviolet light emitted from the light source to an exposure mask on which an exposure pattern is formed, and a projection lens for projecting the exposure pattern to a subject to be processed, the self-cleaning transmittable plate being arranged at a position where the exposure mask is to be disposed to clean the projection lens with the ultraviolet light, the self-cleaning transmittable plate diffusing or converging ultraviolet light guided by the optical system to irradiate the projection lens with the ultraviolet light.

20

8. The self-cleaning transmittable plate according to claim 7, which is made of a quartz glass plate having a lens-shaped concave or convex portion on a surface thereof or a quartz glass plate having bracelet-shaped concave or convex lenses concentrically arranged on the surface.

25

9. The self-cleaning transmittable plate according

- 24 -

to claim 7, which is made of a quartz glass plate having a lens-shaped concave portion on one surface thereof and bracelet-shaped concave lenses concentrically arranged on the other surface thereof.

5

10. The self-cleaning transmittable plate according to claim 7, which is made of a quartz glass plate having a lens-shaped convex portion on one surface thereof and bracelet-shaped convex lenses concentrically arranged on the other surface thereof.

10